BULLETIN of the
SCHOOL OF EDUCATION
INDIANA UNIVERSITY

Television in Education, With Emphasis on Its Use at Indiana University

by

WILLIAM T. VOORHIES

Vol. 37, No. 1 January, 1961

OFFICERS OF THE UNIVERSITY

HERMAN B WELLS, A.M., LL.D., President

RALPH L. COLLINS, Ph.D., Vice-President, and Dean of the Faculties

JOSEPH AMOS FRANKLIN, B.S., Vice-President, and Treasurer

JOHN WILLIAM ASHTON, Ph.D., LL.D., Vice-President for Graduate Development, and Dean of the Graduate School

SAMUEL EDWARD BRADEN, Ph.D., Vice-President, and Dean for Undergraduate Development

CHARLES EDWIN HARRELL, A.B., LL.B., Registrar, and Director of the Office of Records and Admissions

ADMINISTRATIVE STAFF OF THE SCHOOL OF EDUCATION

HAROLD GRAY SHANE, Ph.D., Dean

HOWARD T. BATCHELDER, Ph.D., Associate Dean, and Director of Graduate Studies

PHILIP PEAK, Ph.D., Assistant Dean

(MRS.) DOROTHY J. MCCAW, Assistant to the Dean

OTTO HUGHES, Ed.D., Director of the University Schools

KATHLEEN DUODALE, A.M., Editor of Publications in Education

ADMINISTRATIVE STAFF OF THE DIVISION OF RESEARCH AND FIELD SERVICES

HAROLD H. CHURCH, Ph.D., Director

H. GLENN LUDLOW, Ph.D., Assistant Director

RUTH FAY ARGANBRIGHT, M.S. in Ed., Assistant Director

W. MONFORT BARR, Ed.D., Assistant Director of School Surveys

PAUL W. SEAGERS, Ed.D., School Building Consultant

BULLETIN OF THE SCHOOL OF EDUCATION
INDIANA UNIVERSITY

TELEVISION IN EDUCATION, WITH EMPHASIS ON ITS USE AT INDIANA UNIVERSITY

by

William T. Voorhies

Published by the

DIVISION OF RESEARCH AND FIELD SERVICES

Indiana University

Price: $1.25 per copy postpaid
Available at the Indiana University Bookstore
Bloomington, Indiana

Subscriptions
$5.00 per year, for six issues
Subscribe through the School of Education,
Indiana University, Bloomington, Indiana

Entered as second-class mail matter September 30, 1924, at the post office at Bloomington, Indiana, under the Act of August 24, 1912. Published in January, March, May, July, September, and November of each year, from the University Office, Bloomington, Indiana.

TABLE OF CONTENTS

Chapter		Page
I	THE BEGINNINGS OF EDUCATIONAL TELEVISION	1
	Definition of Terms	3
II	USES OF EDUCATIONAL TELEVISION	4
	Studies in the Utilization of Television	6
	Direct Instruction	6
	Observation of Instruction	10
	Summary	11
III	TELEVISION AT INDIANA UNIVERSITY	12
	Radio and Television Department Productions	14
	Midwest Program on Airborne Television Instruction	22
	Continental Classroom	24
	School of Education Use for Observation	25
	Description of Facilities	25
	Study Made of Closed-Circuit Television Use	31
	Conclusions Made from Study	32
IV	PROBLEMS AND ADVANTAGES	36
	Problems Often Encountered	36
	Questions Often Asked	37
	Need for Fundamental Research	38
	BIBLIOGRAPHY	41
	APPENDIX	44

LIST OF FIGURES

Figures		Page
1.	Master audio control room, WFIU, Indiana University-owned educational radio station	12
2.	William H. Kroll operating the film developing unit in the Radio and Television Department	13
3.	A television dramatic production in rehearsal at the campus studios.	14
4.	Harold G. Shane, Dean of the School of Education, and Robert L. Allen, Instructor in Distributive Education, discussing vocational education on a program presented by the Indiana University Radio and Television Service	15
5.	W. A. Williams, State Director of Vocational Education, appearing before IURTS cameras.	16
6.	Fairchild H. Carter, Neal E. Vivian, Robert L. Allen, and W. A. Williams discussing future programs with Robert M. Petranoff, Producer-Writer for WFIU	17
7.	Robert F. Byrnes, Director and Chairman of the Russian and East European Institute at Indiana University, discussing a technical point with James E. Lynch, former Program Director for WFIU, on Dr. Byrnes' program for credit entitled "The Russian Revolutions and the Soviet Regime". . .	18
8.	Thomas J. Crawford, Associate Professor of Business Education, preparing a program in his TV series entitled "Beginning Shorthand"	19
9.	View of the interior of the demonstration classroom, Room 313, in the University School.	26
10.	Demonstration classroom	28
11.	Viewing room.	29
12.	Closed-circuit audio and video control panel adjoining the demonstration classroom	30
13.	Telecast of first graders to be observed by students in Room 127	34

ACKNOWLEDGMENTS

The author gratefully acknowledges the assistance of Mr. Elmer G. Sulzer, Director of Radio and Television Communications and Chairman of the Radio and Television Department at Indiana University; Mr. Robert M. Petranoff, Producer-writer, Radio and Television Services, and Assistant Professor of Radio and Television; Mr. James Rolfe, Chief Engineer of WFIU; and Miss Louise H. Rogers, Assistant Professor in the Division of University Extension, in providing much of the information on which the following study is based.

Thanks are also extended to Dr. Howard T. Batchelder, director of the author's doctoral thesis, from which some of the material for the study was gleaned, and to the University School pupils and the School of Education students who participated in the original study.

W.T.V.

VITA

William T. Voorhies

Dr. Voorhies received his B.S., M.S., and Ed.D. degrees from Indiana University. Before joining the School of Education faculty in 1957 he taught at Reitz High School in Evansville and at Bloomington High School, where he was teacher of English and director of speech, radio, and dramatics. During summers he worked professionally in local radio and television stations. His dissertation dealt with the use of closed-circuit television for observation of classroom instruction in the School of Education at Indiana University. In June of 1960, Dr. Voorhies served as a member of the Advisory Editorial Panel for the Midwest Council on Airborne Television Instruction during preparation of the Manual for Area Coordinators. He is, at the present time, an Assistant Professor of Education and Counselor in the Graduate Division of the School of Education, Indiana University.

CHAPTER I

THE BEGINNINGS OF EDUCATIONAL TELEVISION

The use of television in education has made continuous and phenomenal growth since it was first attempted, and Indiana University has reflected that growth in its own television activities. It is with the growth of educational television and Indiana University's participation in its use that this study deals.

In 1952 the Federal Communications Commission reserved 242 television channels for education. Since that time more have been added, bringing the total to 258.[1] At the present time (1960) there are 47 non-commercial educational stations broadcasting to an audience in excess of 12 million.[2] Well over 200 closed-circuit installations in colleges, public school systems, military establishments, and hospitals are being utilized for direct teaching or for observation.[3]

In 1957, the 19 states in the North Central Association of Colleges and Secondary Schools had 16 educationally-owned stations on the air, at least 48 institutions were operating closed-circuit installations, and at least 56 had offered or were currently offering courses for credit over commercial or educational television stations or both. At the present time such programs are developing so fast that it is difficult to keep data concerning them up to date.[4]

Authorities in the field predict that educational television will become the greatest educational tool ever developed. Thomas Clark Pollock,[5] of New York University, recently stated that television offers the greatest opportunity for educational advancement since the introduction of printing by movable type. In another

---

[1]Joint Council on Educational Television, Educational Television Fact Sheet and Box Score, p. 1.

[2]Committee on Television, American Council on Education, Educational Television Newsletter, p. 6.

[3]Educational Television Fact Book, pp. 1-2.

[4]Hull, R. B., "Educational Television Activity in the North Central States--An Overview," The North Central Association Quarterly 32:357-358, April, 1958.

[5]Stoddard, A. J., Schools for Tomorrow: An Educator's Blueprint, p. 27.

publication he said, "We must make better use of the teaching resources we have which, I think, leads inevitably to television, either open- or closed-circuit or both."[6] Nathan M. Pusey,[7] president of Harvard University, is convinced that television is going to make more impact on human minds than any earlier means of communication has made. If this is true, he contends that it is clearly important that an effort be made to establish a system of educational television throughout the country.

Through the efforts of the Ford Foundation, its Fund for Adult Education, and its Fund for the Advancement of Education, which have supplied $26.4 million of the $60 million spent on educational television during the last five years, there is now a state-wide television network of three stations in Alabama, a Georgia network due to commence telecasting this spring, five Florida stations due to combine later, and a move started to set up an Ohio state-wide network.[8]

In August, 1957, the Southern Regional Educational Board began planning an ambitious educational project which will link 16 southern states in a television network, tying together the colleges and universities of the South, within a period of 10 years.[9]

The New York State Legislature has appropriated funds for the exclusive use of VOR-TV in New York from 9:00 a.m. to 5:00 p.m. on weekdays and 8:00 to 12:00 a.m. on Saturdays to broadcast educational programs.[10]

An educational radio and television center has been set up at Ann Arbor, Michigan, with headquarters in New York City, to provide a national program service and to function as a clearing house for information and research for the growing network of ETV outlets.[11]

---

[6]Pollock, T. C., "Television as a Means of Instruction in the College Classroom," in International Educational Television Seminar, p. 2.

[7]What They're Saying About Educational Television.

[8]"ETV: 5 Years and $60 Million Later," Broadcasting 53: 94, November 11, 1957.

[9]Ibid., p. 94.

[10]Committee on Television, American Council on Education, op. cit., p. 6.

[11]Newburn, H. K., "Editorial," Journal of the University Film Producers Association 10:3, Winter, 1958.

According to a survey in which 361 of the 411 AACTE member institutions participated, 37 are currently utilizing closed-circuit television installations, 50 are planning to use closed-circuit television, and 22 others are studying the possible use of closed-circuit television.[12]

The public schools are also experimenting with educational television through the help of the Fund for the Advancement of Education. The largest single project, which is to continue for five years, was begun at Hagerstown, Maryland, in 1956. Last year it connected 37 of the 49 schools by coaxial cable and is instructing 16,500 of its pupils by television.[13] In the meantime, experimentation is going on in many other areas, including those around Chicago, Cincinnati, Detroit, Evanston, Evansville (Indiana), Levittown, Louisville, Pittsburg, Schenectady, St. Louis, and Wichita.

Colleges of teacher education, including the Indiana University School of Education, are experimenting with the use of closed-circuit television in providing observation and demonstration teaching for undergraduate students in professional education courses.[14]

The three possible ways by which an institution may transmit television programs are: (1) by way of an existing commercial television station (as Indiana University is now doing), (2) by institution-owned closed-circuit installations (as the Indiana University School of Education is now doing), or (3) by non-commercial community or institution-owned television stations.[15]

Definition of Terms

Certain terms connected with educational television have come to have rather specific meanings. Some of those used in this study are as follows:

---

[12]Committee on Studies, Subcommittee on Television and Teacher Education, Closed-Circuit Television in A.A.C.T.E. Member Institutions, pp. 1-15.

[13]Hagerstown, Maryland, The Board of Education, Summary of Progress Report, Closed-Circuit Television: Teaching in Washington County, 1958-1959, p. 1.

[14]Committee on Studies, Subcommittee on Television and Teacher Education, op. cit., pp. 8-15.

[15]Educational Television and Radio Center, Educational Television and the Schools, pp. 12-13.

1. Educational television is the broad umbrella-like term which covers any production which has an educational connotation. It includes programs designed both for education and for entertainment. Any program which is in the least informative in nature can be said to be educational.

2. Televised instruction is any classroom activity which has been photographed by a television camera. A camera that has merely been focused on the classroom teacher or on the pupils in the classroom only provides images of classroom activities and materials for the purpose of transmitting the activity to others. The use of television in this instance is not involved in the instructional process; it is a means of relaying and transmitting instruction which is not designed specifically for instructional television.

3. Instructional television is specifically and intentionally designed for instruction. The utilization of television production techniques and the television facilities themselves are planned as an integral part of the instruction.

Instructional television may be used in three major and distinct ways:

a. As total instruction. In such instances the studio or television teacher provides practically all of the teaching. This is usually done when teachers are unavailable for such subjects as foreign languages or sciences, when the number of teachers available is too small to serve the needs of the students, or when large introductory courses are offered. Colleges and universities usually have made greater use of this kind of instruction than have elementary and secondary schools.

b. As a major resource. In this type of television instruction the studio teacher and classroom teacher use the team approach and, in effect, become partners. Both work to reinforce and enhance the education of the pupils. The principal content of the course is provided by the television teacher, while the classroom teacher is present in the classroom to handle the important activities there and to keep the lessons meaningful to the pupils.

c. As enrichment and supplement. In this way special, unique, or hard-to-procure materials are provided which are valuable to the pupils. For example, a president's inauguration, a special event or address, etc., can be brought into the classroom.

Uses of Educational Television

Regardless of the ways in which televised instruction may be presented, it is used either for direct instruction or for observation. In the case of direct instruction, the viewer is expected to

participate actively in the lesson and to learn the material presented or discussed. Indiana University's courses for credit and the offerings of the Continental Classroom are of this type, and those of the Midwest Program for Airborne Television programs will be of this type when this program goes on the air.

On the other hand, when television is used for observation, the viewer is to observe others performing or learning. It is hoped he will learn from what he sees; however, the subject matter being presented is not usually presented for the benefit of the viewer but, rather, for someone other than the viewer, who is usually a pupil in the class being televised. For example, interns in schools of medicine observe operations and techniques of experienced physicians, and future teachers in schools of education observe examples of teaching being provided to pupils in the classroom by experienced teachers.

CHAPTER II

STUDIES IN THE UTILIZATION OF TELEVISION

Although the use of television in education is relatively new, there have been numerous studies made which shed light on its use for both direct instruction and observation purposes.

Direct Instruction

Many of the studies have attempted to determine achievement in direct teaching by television as compared to that by the conventional classroom method. Among those that show that television is superior to the conventional medium are the following:

Belson[1] found that students learned significantly more French words and phrases after four television broadcasts than did members of the controlled group who were not exposed to television.

Boone,[2] who tested naval academy students in two electronic courses, found that television produced significantly higher achievement scores than did normal classroom procedures in one of the courses.

Husband[3] found that in a course in Psychology of Adjustment, students who took the course through television at home did better than those in two on-campus classes taught in the conventional manner.

Pasewark[4] found that college students in a typing class taught by TV were significantly faster on typing speed tests than were those taught in the conventional manner.

---

[1]Belson, W. A., "Learning and Attitude Changes Resulting from Viewing a Television Series 'Bon Voyage,'" British Journal of Educational Psychology 26:31-38, February, 1956.

[2]Boone, W. F., Evaluation of the U.S. Naval Academy Educational Television as a Teaching Aid.

[3]Husband, R. W., "Television Versus Classroom for Learning General Psychology," American Psychologist 9:181-183, May, 1954.

[4]Pasewark, W. R., The Effectiveness of Television as a Medium of Learning Typewriting.

Rock, Duva, and Murray,[5] who worked with naval reservists, found that TV students did significantly better than conventional classroom students in one half of the comparisons made on achievement tests.

Stromberg[6] compared TV students in an introductory course with students who had been in previous classes taught in the regular manner. He found that the median scores of TV students were higher than the median scores of 1,200 students who had taken the test previously on campus.

Tannenbaum[7] found that dentists exposed to TV or kinescopes scored significantly higher on an information test than did a controlled group of dentists.

Ulrich[8] found that eighth grade television students did significantly better than a controlled group which was not exposed to the material.

A few studies, characterized by the one which follows, show that the conventional teaching method is more effective than that of television teaching.

Allen[9] tested ROTC students who took a food service course and found that TV students did slightly poorer than those taught by regular classroom procedures.

Most of the studies showed that there is no significant difference between the conventional teaching method and the use of television. Studies which substantiated this statement follow:

---

[5]Rock, R. T., Jr.; Duva, J. S.; and Murray, J. E., Training by Television: A Study in Learning and Retention.

[6]Stromberg, E. L., "College Credit for Television Home Study," American Psychologist 7:507-509, September, 1952.

[7]Tannenbaum, P. H., Instruction Through Television: An Experimental Study.

[8]Ulrich, J. H., "An Experimental Study of the Acquisition of Information from Three Types of Recorded Television Presentation," Dissertation Abstracts 15:2346, November, 1955.

[9]Allen, R., Quartermaster Training Command Educational-Television Study.

Evans, Roney, and McAdams[10] found no significant differences in performances in final examinations between TV students and on-campus students in biology and psychology.

Anderson and Vander Meer[11] similarly found no significance on final examinations taken by high school sophomores who were taught the functions of the slide rule by television and by those taught by the regular classroom procedure.

Carpenter and Greenhill[12] found no significant differences in regular semester examinations between TV students and conventionally instructed students in chemistry and psychology.

Parsons[13] found no significant differences in achievement tests between TV students, regular classroom students, and correspondence students in a child psychology course.

Fritz, Humphrey, Greenlee, and Madison[14] reported that army personnel who took about one half of a radio electronics course by television did as well on an achievement test as regularly instructed students.

Kanner, Runyon, and Desiderato,[15] using army basic trainees, found that for 14 hours of instruction which involved eight different subjects there were no significant differences in test scores on 12 of 17 tests between those trainees taught by television and those taught by regular instruction.

---

[10]Evans, R. T.; Roney, H. B.; and McAdams, W. J., "An Evaluation of the Effectiveness of Instruction and Audience Reaction to Programming on an Educational Television Station," Journal of Applied Psychology 39:277-279, August, 1955.

[11]Anderson, G. R., and Vander Meer, A. W., "A Comparative Study of the Effectiveness of Lessons on the Slide Rule Presented via Television and in Person," The Mathematics Teacher 47:323-327, May, 1954.

[12]Carpenter, C. R., and Greenhill, L. P., An Investigation of Closed-Circuit Television for Teaching University Courses.

[13]Parsons, T. S., A Comparative Analysis of Some Outcomes of Instruction by Kinescope, Correspondence Study and Classroom Procedures.

[14]Fritz, M. F.; Humphrey, J. E.; Greenlee, J. A.; and Madison, R. L., Survey of Television Utilization in Army Training.

[15]Kanner, J. H.; Runyon, R. P.; and Desiderato, O., Television in Army Training: Evaluation of Television in Army Basic Training.

Harshbarger and Becker[16] found that instructors in a political science course felt that there was no difference in achievement between those who were exposed to television and those who were taught the course in the regular classroom manner.

Willis[17] found no significant difference in achievement between TV students and regular classroom students in high school mathematics and physics classes.

Erickson and Chausow,[18] in a study which involved Chicago junior colleges, found that there were no significant differences between the controlled and the television groups in achievement in accounting, English, social science, psychology, and shorthand; however, significant differences were found which favored the television group in humanities, biology, and physical science.

In a very recent study by Bailey,[19] comparing the effectiveness of instruction by closed-circuit television and of regular classroom instruction, the researcher matched pairs on grade-point index and sex and then administered a pre-test of 78 multiple choice items at the beginning of a course in physics at Syracuse University. One member of each pair received two lectures a week by closed-circuit television, while the other member was instructed in a regular science classroom. The original test, which was given at the beginning of the semester, was incorporated in the final examination of the course. Means were obtained for the two groups. The t test for difference between means for matched pairs was used to test the hypothesis that there was no difference in the achievement between the two methods of presentation. The value of t was too small to be significant; therefore it was concluded that instruction by closed-circuit television was just as effective as regular classroom face-to-face instruction.

This year's report on the national program in the use of television in over 200 elementary and secondary public schools[20] showed that 68 of 110 comparisons of television versus controlled groups

---

[16]Harshbarger, H. C., and Becker, S. L., Teaching by Discussion on Television.

[17]Willis, B. C., Evaluation Report of the Two Week Experiment of Direct Teaching on Television.

[18]Erickson, C. G., and Chausow, H. M., "The Chicago City Junior College Experiment in Offering College Courses for Credit via Open Circuit Television: A Report of the Second Year of a Three Year Project," in Chicago City Junior College, no. 17, April, 1959.

[19]Bailey, H. S., "Teaching Physics on Closed-Circuit Television," Dissertation Abstracts 19:1947, February, 1959.

[20]R.C.A. Educational TV News, February, 1959.

favored television. In 38 cases, 29 significant differences were shown for television as compared to nine for nontelevision classes.

Observation of Instruction

At this point, examples of studies relative to the use of television for observation of classroom instruction are in order.

In the second report of investigations in progress at the University of Minnesota, in which closed-circuit television was used for high school classroom observation, Keller and Gould[21] found that live observation seemed to be necessary to enable the observers to gain the skill in self-directed selective observation needed to give perspective and understanding to the total teaching situation. They also found that the television medium was not well suited for providing an over-all view of the total class situation. On the other hand, the experimentation showed that, by television, one could take advantage of the fact that attention could be focused and concentrated on specific areas of interest.

Black[22] attempted to test the null hypothesis for differences in achievement between matched groups. The two groups consisted of pairs of students matched on raw scores obtained from the American Council on Education Psychological Examination for College Freshmen (ACE) and the Minnesota Teacher Attitude Inventory (MTAI). The independent variable in the study was the different media for observation.

Students were graded on observation reports, on a series of teacher-made objective examinations, and on an end-of-term final examination. The results of the study showed that:

1. There was no difference in acuity of observation between the two matched groups, that is, between those who observed by closed-circuit television and those who observed directly.

2. There was a possibility of difference in the achievement of the two matched groups in course content as measured by unit examinations. This difference favored the direct observation group.

---

[21]Keller, R. J., and Gould, O. E., Closed-Circuit Television in Teacher Education, p. 17.

[22]Black, W. A., A Report on the Use of Closed-Circuit Television at Kansas State Teachers College, 37 pp.

3. There was no difference in the achievement of the two matched groups in course content as measured by the final examination. Therefore neither method of viewing seemed to hold advantage over the other.

In a study at San Jose State College,[23] it was concluded that there was no evidence that either unsupported closed-circuit television observation or unsupported classroom observation was significantly superior to the other in developing insights among prospective teachers about peer relations in the elementary classroom. There was evidence that the use of closed-circuit television followed by actual classroom observation was more effective than any of the other variables tested, and this difference was significant at or above the ninety-fifth percentile confidence level.

In a study conducted by the author at Indiana University, college students enrolled in two education methods courses judged closed-circuit television superior to direct observation for observing five of 30 selected aspects of the classroom observation process. Those phases were: (1) the physical characteristics of pupils, (2) the various characteristics of the teaching learning process, (3) how teachers may develop a favorable learning environment, (4) efforts of the teacher to motivate pupils, and (5) various teaching methods.[24] The other 25 phases were judged by this same group to be better observed by direct observation.

Summary

It is encouraging to note that general studies in the area show that pupils taught by television have learned the content as well as, or better than, those taught without television.

In spite of the research which has been conducted, however, there are still many questions to be explored and answered. As yet, no studies have been able to compare television and non-television teaching of such "intangibles" as citizenship participation, critical thinking, development of attitudes, and human relations. This, however, applies to learning in general as well as to television.

---

[23] The San Jose State College Teacher Education Experiment, 19 pp..

[24] Voorhies, W. T., An Analysis of Pupil and College Student Opinions Concerning the Use of Closed-Circuit Television for Observation of Classroom Instruction at Indiana University, 229 pp.

CHAPTER III

TELEVISION AT INDIANA UNIVERSITY

The television activities of Indiana University have included productions by the Radio and Television Department, participation in both the Midwest Program on Airborne Television Instruction and the Continental Classroom, and a closed-circuit installation for observation of classroom instruction in the University School and the School of Education.

Figure 1. Master audio control room, WFIU, Indiana University-owned educational radio station

Figure 2. William H. Kroll operating the film developing unit in the Radio and Television Department

Radio and Television Department Productions

With the Radio and Television Department providing the facilities and equipment, Indiana University has, since 1953, been producing television programs of an educational, cultural, and public relations nature through the facilities of various commercial television stations (primarily by micro-wave to station WTTV, Channel 4, Indianapolis). Some of these have been offered for credit and some have not.

The facilities of the department consist of studios, control rooms, art and title card room, film library, video tape-recorder, kinescope room, dark room, newsroom, and properties room.

Figure 3. A television dramatic production in rehearsal at the campus studios. (Note camera, cameramen, lights, set, microphones, cast members, and floor manager)

The major equipment found in those areas includes:

One videcon film camera, camera chain, opaque projector, slide projector, and 16mm film projector

Three RCA image orthicon cameras

Two Houston-Fearless dollies

One Senior sound boom

One portable monitor and clock

Television lights

Lighting control equipment

One Century microphone boom, hand-wheel control type

Figure 4. Harold G. Shane, Dean of the School of Education, and Robert L. Allen, Instructor in Distributive Education, discussing vocational education on a program presented by the Indiana University Radio and Television Service

One color TV receiver for instructional and monitoring purposes

Three black and white TV sets

Four line or "house" monitors for checking

One rear-screen projector

One Kensol hot press (for TV titles)

One commercial dry mount press

One title drum, motor driven

Figure 5. W. A. Williams, State Director of Vocational Education, appearing before IURTS cameras

The television recording equipment consists of the following:

RCA video tape recorder

GPL kinescope

H-F-rapid developer

Stancil-Hoffman synchronous tape recorder

Television film editing equipment

One Conrac receiver video-audio for high quality monitoring of off-air signals or for kinescoping off-air pickups

Two RCA portable projectors, for previewing films and kinescopes and for classroom showing

Figure 6. Fairchild H. Carter, Neal E. Vivian, Robert L. Allen, and W. A. Williams discussing future programs with Robert M. Petranoff, Producer-Writer for WFIU

One small hand-cranked motion picture film developer for news use and student training

Appropriate testing and maintenance equipment.

Some of the 29 courses which have been produced for high school or college credit since 1953 through the facilities of the Radio and Television Department include the following:

Business F260--Personal Finance

Business W204--Business Communications

Economics E203--Introduction to Economics

Education E315--Education for Young Children

Education G490--Individual Study in Guidance

English W101--Elementary Composition I

Figure 7. Robert F. Byrnes, Director and Chairman of the Russian and East European Institute at Indiana University, discussing a technical point with James E. Lynch, former Program Director for WFIU, on Dr. Byrnes' program for credit entitled "The Russian Revolutions and the Soviet Regime"

Fine Arts H100--Art Appreciation

Fine Arts S255--Crafts and Design

Geography G200--World Geography

Government G103--Introduction to American Government I

Government G104--Introduction to American Government II

High School Mathematics IV--High School Trigometry

History H464--The Russian Revolutions and the Soviet Regime

Figure 8. Thomas J. Crawford, Associate Professor of Business Education, preparing a program in his TV series entitled "Beginning Shorthand"

HPER H160--First Aid

HPER H170--Nature and Practice of Play

Linguistics L103--Introduction to the Study of Language

Music M174--Music Appreciation

Radio and Television R203--Introduction to Radio and Television I

Classics C210, a televised course entitled Archeology of Greece, was begun on September 27, 1960, and is to continue until January 27, 1961.

A summarization of last year's educational television activities at Indiana University will serve to indicate the scope and nature of the programs produced. Among the 354 separate telecasts produced, there were 23 series of six or more programs each. The series "News in Perspective" and "Challenge for Tomorrow" were the longest series, with 38 and 37 programs respectively. "Spoken French" had 23 programs in its series. All but four of the 354 telecasts were 30-minute programs.[1]

Among the other series of programs offered were the following, which were not offered for credit:

School of Business--Credit

School of Education agencies--Face of a Child (This series was repeated)

School of Education--Retailing for Profit

Department of Fine Arts--Elements of Art

Folklore Institute--Folklore Around the World

Department of Geology--Our Geological Heritage

Department of Government--Hat in the Ring

School of Health, Physical Education and Recreation--Fun and Fitness

Department of Journalism--Press Conference

School of Music--Serenade for Strings

---

[1]Indiana University Radio and Television Service, Radio and Television Department, President's Report, 1959-1960, unpublished manuscript.

School of Music--Your Musical Cue

Radio and Television Service--Masterworks

Radio and Television Service--Montage

Radio and Television Service--Other People, Other Lands

Seven programs, each seven minutes in length, were presented during the half-time periods of Indiana University basketball game telecasts. Each program was one in a series entitled "Profile of Eminence," which featured biographical accounts and accomplishments of outstanding Indiana University professors.

Television film inserts produced for use on Indiana University radio and television service programs through WTTV included 92 news and 75 non-news television programs. News films produced for use on other television stations included:

Protest march by students against segregation--WHAS-TV, Louisville, and WFBM-TV, Indianapolis

Feature on girls I.U. basketball team game to raise money for Olympics--WFBM-TV, Indianapolis

Film on opening of spring football practice--WFBM-TV, Indianapolis, and WTHI-TV, Terre Haute

Film on I.U.-Ohio State game which followed Herbie Lee's suspension from the team--WFBM-TV, Indianapolis

Two films: (a) the moving of the books into the Lilly Library, and (b) Graduation ceremony at Indiana University--syndicated to all Indiana and Louisville stations through the News Bureau

Kinescope recordings made during the year numbered 118, which amounted to a total running time of 59 hours.

One or more programs were carried by a total of 18 television stations other than WTTV, including:

WFBM-TV	Indianapolis	WFAM-TV	Lafayette
WAVE-TV	Louisville, Ky.	WSJV	Elkhart
WFIE-TV	Evansville	WPTA	Fort Wayne
WSBT-TV	South Bend	WMAR-TV	Baltimore, Md.
WTHI-TV	Terre Haute	WQUD-TV	Pennsylvania
WLBC-TV	Muncie	WSVA-TV	Harrisonburg, Va.
WLW -I	Indianapolis	WCPO-TV	Cincinnati, Ohio
WHAS-TV	Louisville, Ky.	KELO-TV	Sioux Falls, S.D.
WTVW-TV	Evansville		

Excluding the time on station WTTV in Indianapolis, the television programs presented on commercial television stations used what amounted to an equivalent of approximately $85,000 in consumed television time.

Midwest Program on Airborne Television Instruction

Indiana University was host during the summer of 1960 to a conference and workshop directed toward helping school officials, teachers, P.T.A. representatives, and others prepare for the Midwest Program on Airborne Television Instruction. The program, costing over $7 million, is being financed by a $4½ million appropriation from the Ford Foundation and private industry.[2]

The purposes of the program are:

1. To broaden the range of educational offerings available to many schools

2. To increase the quality of offerings in schools and colleges where resources are unavailable or inadequate at present

3. To do these at a cost that is less than that for a comparable increase in quality achieved by other means

4. To conduct the initial program in a manner that will assist the development of a permanent facility for the long-range management and financing of the airborne instructional program by local and state educational authorities.

Indiana University is participating in the MPATI project by serving as one of its 18 resource institutions and by providing the half-time services of a School of Education faculty member as an area co-ordinator. The area co-ordinator is head of a 27-member area committee whose function is to assist the participating schools to make the best possible professional and technical use of the program.

This institution has also agreed to make available the resources of the institution in such activities as research, teacher education, publicity, and the dissemination to local schools of information helpful in carrying on telecasts in the MPATI.

---

[2]Midwest Council on Airborne Television Instruction, Manual for Area Coordinators, p. 13.

Other resource institutions participating in the Midwest Airborne Program are:

Ball State Teachers College
Muncie, Indiana

Butler University
Indianapolis, Indiana

Indiana State Teachers College
Terre Haute, Indiana

Notre Dame University
Notre Dame, Indiana

Purdue University
Lafayette, Indiana

Northern Illinois University
DeKalb, Illinois

Northwestern University
Evanston, Illinois

University of Illinois
Urbana, Illinois

University of Kentucky
Lexington, Kentucky

University of Louisville
Louisville, Kentucky

Michigan State University
East Lansing, Michigan

Western Michigan University
Kalamazoo, Michigan

Wayne State University
Detroit, Michigan

Miami University
Oxford, Ohio

Ohio State University
Columbus, Ohio

Bowling Green State University
Bowling Green, Ohio

University of Wisconsin
Milwaukee Branch

Beginning in February of 1961, a DC6AB aircraft equipped with two television transmitters and an external 30-foot sending antenna will circle at an assigned altitude of 23,000 feet over Montpelier, Indiana, and transmit video taped demonstration educational programs into parts of a six-state area (Indiana, Michigan, Ohio, Kentucky, Illinois, and Wisconsin). These test telecasts will continue until May for the purpose of allowing schools to install and check receiving equipment, to check the quality of signals received, and to observe the demonstration courses. A second aircraft will stand by at another location to assure reliability of operations in the event of mechanical or weather difficulty. The signals are expected to reach a radius from 150 to 200 miles.

In the beginning, two television channels will be used simultaneously four days a week, providing for a total of 48 hours per week of telecast courses. Eventually it is hoped that six channels may be used simultaneously to make possible the presentation of 72 separate one-half hour programs during the six-hour school day.

Television teachers have been chosen for the project by a nation-wide "teacher talent search." Nearly 300 teachers were observed by way of "kinescoped" auditions in the viewing rooms at Purdue University where the MPTAI headquarters are based. The teachers who

have been selected will go to local educational television station production centers for the actual recording of the programs.

The tentative schedule of classes for the first academic year includes such courses as Spanish for grades 3 to 6, arithmetic for grades 3, 4, 5, and 6; music and art for the elementary and high school; general science for the junior high school; and physics and government for the senior high school grades. The program schedule is distributed roughly in the ratio of about 40 per cent each for the elementary and secondary school levels and 20 per cent for the college and university level.

Schools which wish to participate in the project must equip themselves at their own expense, may participate on a voluntary basis, and may select or reject programs from the telecast offerings.

After the programs have been telecast by the MPATI they will be made available for use by educational institutions and by ground-based educational and commercial television stations.

Continental Classroom

Indiana University has participated in the Continental Classroom since its beginning by offering credit for the early morning physics, chemistry, and mathematics courses carried by a commercial television network. Students registered and enrolled for these courses through the Division of University Extension. Graduate credit was earned in physics under the I.U. course number P455-456, Topics for Physics Teachers I-II; and in chemistry under the I.U. course number C407-408, Modern Chemistry I-II. This past September the Continental Classroom began offering two graduate courses, Teaching of Probability and Statistics, and Teaching Modern Algebra, in which students may earn graduate credit from the Indiana University Department of Mathematics in course numbers and titles yet to be assigned.

The examinations were prepared by the television instructor of the course or by a national teaching service, with changes and alterations made by members of the I.U. faculty in the academic area. The examinations were given on the campus or at one of the extension centers under the supervision of a member of the faculty.

The participating colleges and universities utilized the network program at no cost and retained complete autonomy with respect to the implementation of the television lecture-demonstrations. These programs were produced under the auspices of the Learning Resources Institute, which welcomed the co-operation of all institutions in conducting a carefully planned evaluation of the project.

Credit earned in these courses could be applied toward either the Master of Arts for Teachers or the Master of Science in Education

degree at Indiana University. More than 50 persons have received college credit through Indiana University by taking advantage of the educational programs produced on the Continental Classroom.

School of Education Use for Observation

As a part of the professional education of teachers at Indiana University, students taking the course in teaching methods are required to observe pupils and experienced teachers in actual classroom teaching situations. Before closed-circuit television was used for this purpose, students had observed classes in person either individually or as part of a group.

In the spring of 1959, Indiana University began experimentation in the use of closed-circuit television to provide further opportunity for School of Education students to observe University School pupils and teachers in actual classroom situations. Certain University School classes in a classroom equipped for television transmission were televised from that room to a specially selected viewing room in the School of Education.[3]

Description of Facilities

One remotely controlled videcon camera was used to secure a wide angle orientation shot of the entire classroom from a forward position in the room, and two remotely controlled videcons were mounted about eight feet above the floor at each end of the room. These cameras could be panned and tilted, and could have their lenses adjusted. Therefore they were used for the specific close-up shots desired. One camera was used primarily to secure pictures of the teacher, while the other was generally focused on the faces of the pupils. Since the cameras were remotely controlled from the control room at the rear of the observation classroom, there were no camera men or coaxial cables and there was no equipment on the floor. The classroom situation was, therefore, much more normal than in many telecasting situations for classroom observation.

In the viewing room, all three camera pictures could be shown at a time, one on each of the three separate camera monitors.

---

[3]Voorhies, W. T., An Analysis of Pupil and College Student Opinions Concerning the Use of Closed-Circuit Television for Observation of Classroom Instruction at Indiana University, 229 pp.

Figure 9. View of the interior of the demonstration classroom, Room 313, in the University School (Note control room in the background, fluorescent ceiling, and remote controlled videcon camera mounted on rear wall)

High school classroom. Room 313 in the University School[4] was used to house the high school classes and the equipment for observation by college students. The room was located on the third floor and had an east outside wall. The windows at the side and the two doors into the hall could be opened for ventilation. The room was equipped with a green chalkboard at each end and an orange colored chalk was used in contrast to the green board.

Cameras were mounted at the front and rear of the room and in the right front corner. An Altec microphone was suspended from the center of the ceiling.

The control room was located in the right rear corner of the room in an offset, 4 by 10 feet in size, that had already been built into the building. The control room was separated from the classroom by a large pane of transparent glass and a standard size door.

Lights capable of producing 280 foot-candles of illumination were installed in the ceiling. They were wired into a rheostatically controlled dimmer capable of dimming in graduation from 280 foot-candles to complete darkness. The light level was usually kept at 240 foot-candles for the transmission of pictures during the observations.

The room was equipped with new glare resistant, blonde finished, movable furniture. Although the furniture was movable, it was usually placed in the conventional classroom arrangement, facing the two cameras at the front and right front of the room and away from the control room. A rug one inch thick covered the floor from wall to wall. The control room was equipped with a video amplifier, an audio control board and amplifier, and three seven-inch camera monitors installed in a bank with individual video gain, beam current, beam focus, pedestal, and signal plate control for each. Each monitor was also equipped with an oscilloscope.

Each camera in the classroom was remotely controlled by switches mounted underneath each camera monitor. Head phones were attached to the talk-back system in the viewing room and were worn by the operator in the control room.

Viewing room. The viewing room,[5] Room 127 on the first floor of the School of Education wing of the same building, was an outside room on the east side of the building and was furnished with movable chairs with writing arms. These were placed in semi-circles and fanned away from the three television receivers located at the front of the room. The viewing room was equipped with translucent shades which kept out the glare but not the daylight.

---

[4]See Figure 10.

[5]See Figure 11.

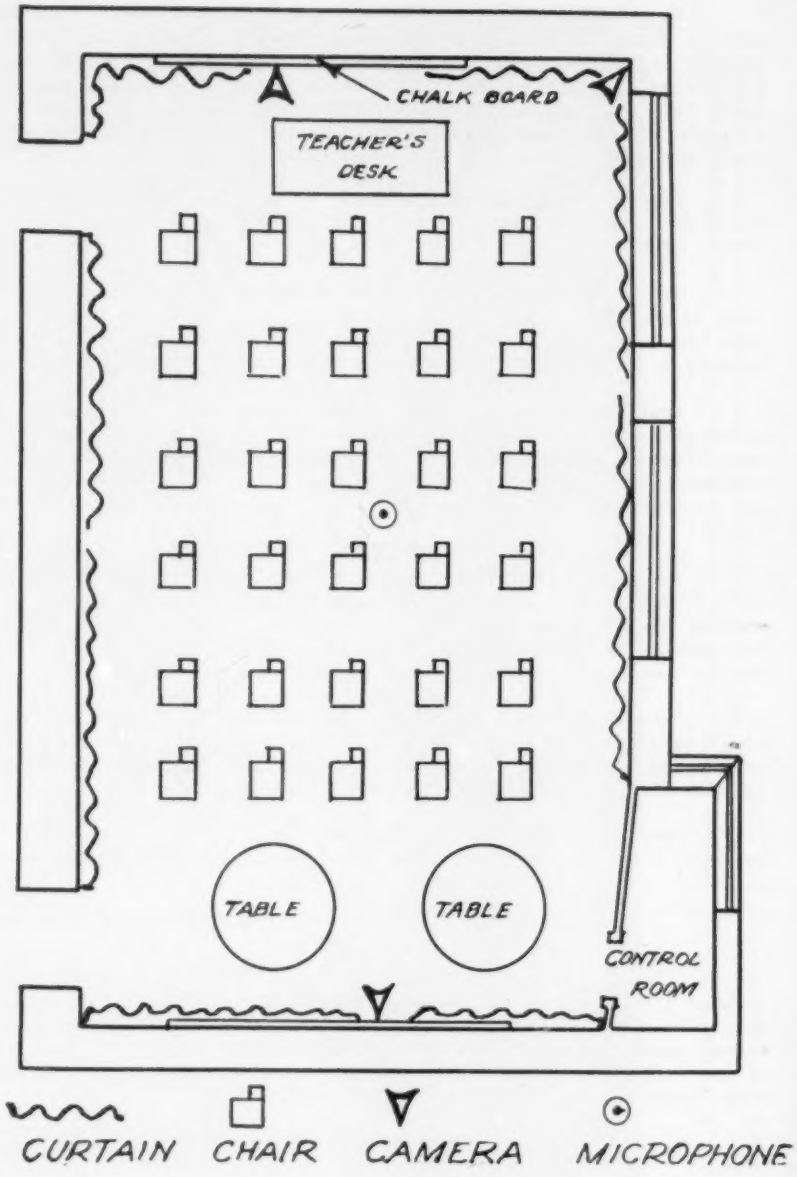

Figure 10. Demonstration classroom

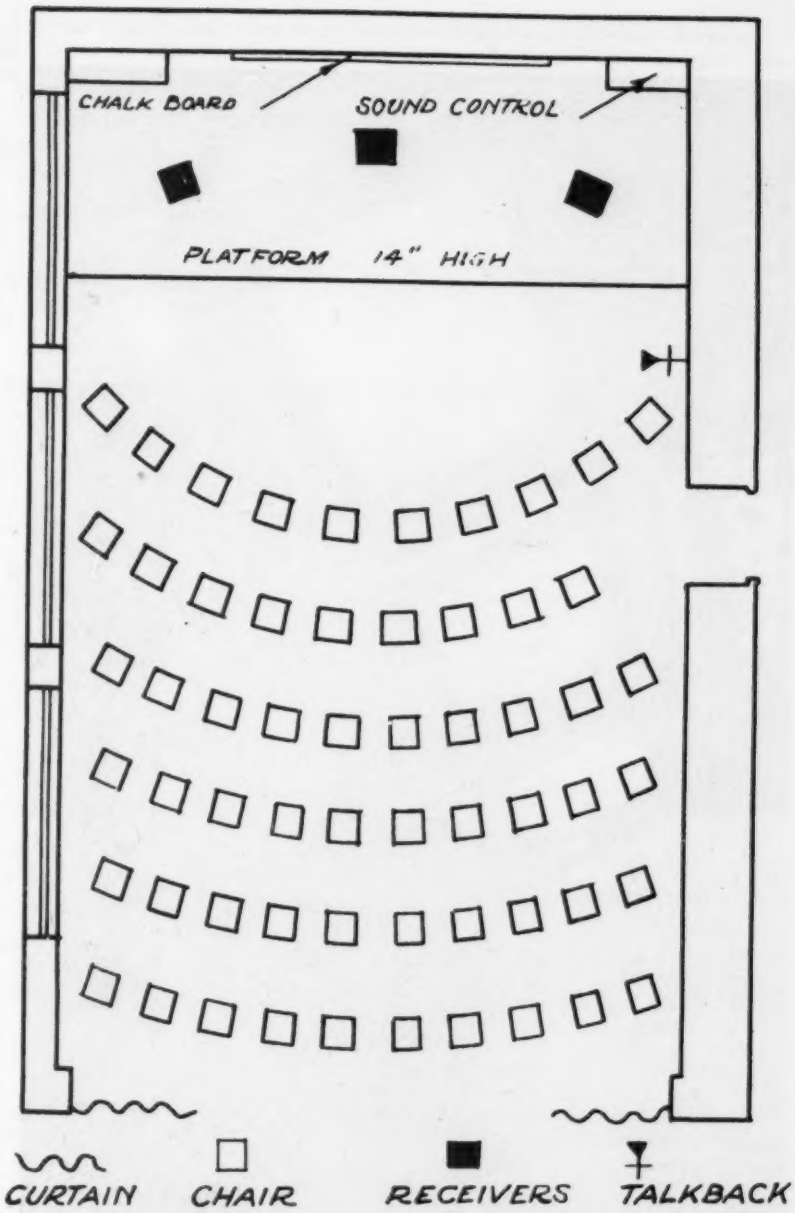

Figure 11. Viewing room

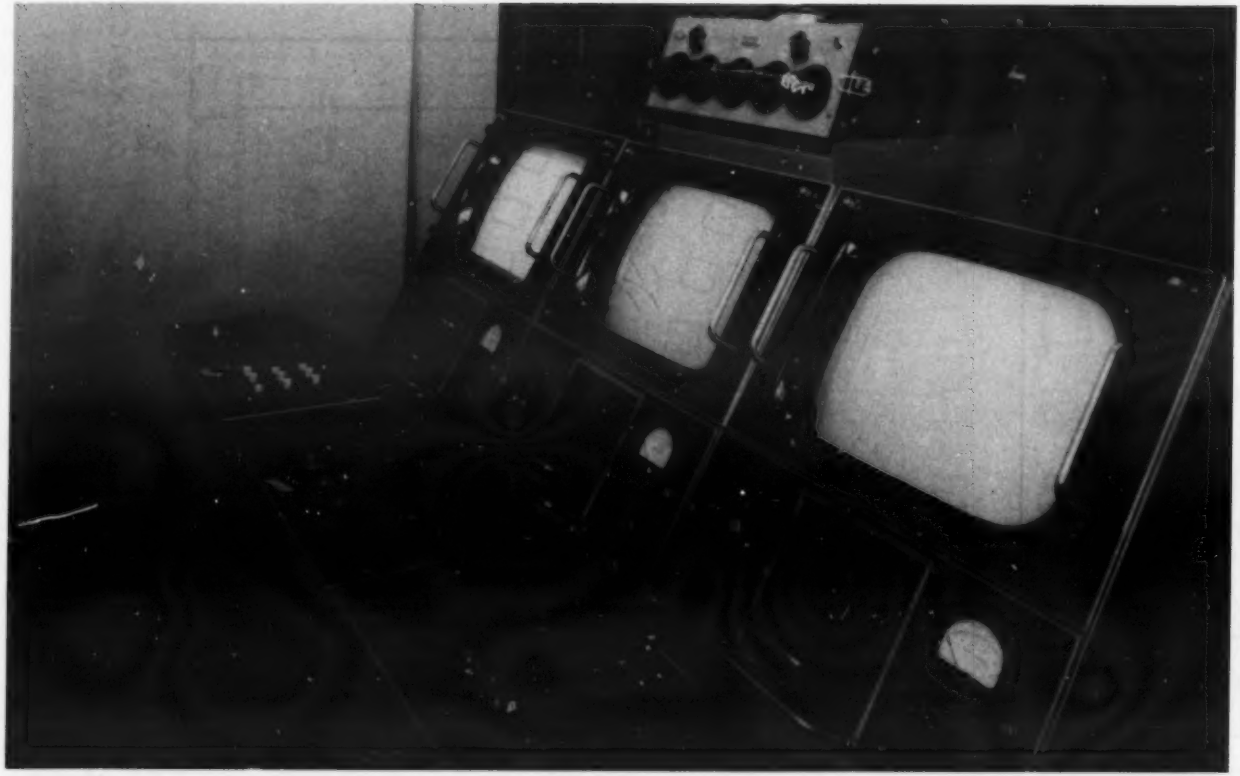

Figure 12. Closed-circuit audio and video control panel adjoining the demonstration classroom

The television receivers, Miratel brand with 24-inch screens, were placed on stands 50 inches high and on a 14-inch raised platform; thus the bottom of the receiver was 64 inches above floor level.

A head-set with a push-to-talk switch was plugged into the right wall and connected to the control board in the control room.

Sound could be adjusted in the viewing room by means of a volume control knob located in a wall cabinet in the front corner of the room. Approximately the same amount of sound, measured in decibels, was constantly sent from the control room. Variations, however, were made in the sound level by various instructors in the viewing room.

The television equipment was procured from the Broadcast Equipment Division of Sarkes Tarzian, Inc., Bloomington, Indiana

Study Made of Closed-Circuit Television Use

A study was conducted by the author during the second semester of the 1958-1959 school year of the use of closed-circuit television for observation of classroom instruction for the purpose of analyzing the opinions of pupils and college students concerning certain technical and procedural aspects in the use of closed-circuit television, the relative value of closed-circuit television and direct observation, and the pupil and college student acceptance of the use of closed-circuit television for observation of classroom instruction.

College students enrolled in the mathematics, language arts, and social studies methods classes at Indiana University observed the teaching of certain University High School pupils in grades 7, 8, 9, 10, and 12 by means of closed-circuit television during the second semester of the academic year, 1958-1959. In all, a total of 86 college students and 175 high school pupils participated in the study.

The necessary data were collected by means of a numerically scaled check list, three opinionnaires, and an interview guide which was used in connection with one of the opinionnaires. The numerically scaled check list was constructed for the purpose of gathering the opinions of the college students relative to certain technical and procedural aspects in the use of closed-circuit television. It was administered to the 86 college students immediately after each had observed a period of classroom instruction by means of closed-circuit television. It was administered four times to the social studies methods students, 10 times to the mathematics methods students, and 10 times to the language arts methods students.

One of the three opinionnaires was constructed for the purpose of gathering opinions concerning the relative value of using closed-circuit television and direct observation. It was administered to

the 86 members of the three methods classes at the end of the first eight weeks in the second semester. The control group, which consisted of the 46 social studies methods class members, had observed four times in the same four classes, in the same order, that were taught by the same teacher and for the same purpose, first by the direct observation method and then by closed-circuit television. An interview guide was also constructed for the purpose of securing further information concerning the relative value in the use of closed-circuit television and direct observation and as a check on the reliability of the opinionnaire instrument. Those in a random sample of 15 of the 46 students in the control group were interviewed.

A pre-test pupil opinionnaire and a pre-test student opinionnaire were constructed for the purpose of obtaining pupil and college student opinions relative to the acceptance of the use of closed-circuit television for observation of classroom instruction. These opinionnaires were administered to all the high school pupils and college students after they had been selected to participate in the closed-circuit television project, but before they had experienced use of the television medium. Each opinionnaire was then changed to past tense and was administered to each high school pupil and college student after he had participated for four weeks in the closed-circuit television project.

Conclusions Made from Study

From the study the following conclusions were drawn:

1. The use of three television receivers, three television cameras, and three different pictures presented simultaneously was more satisfactory than the use of fewer receivers, cameras, and different pictures for observation of classroom instruction by means of closed-circuit television. The amount of satisfaction with each of these variables was in direct proportion to the number used.

2. There was no agreement as to whether the choice of scenes was more satisfactory when selected by the methods class instructor or when chosen by a technical director.

3. There was no agreement as to whether the ability to hear what was going on in the high school classroom was more satisfactory when the microphone was controlled or when it was pre-set and left uncontrolled.

4. There was no agreement by all the students as to whether there should be discussion by observers in the viewing room during the observation. The amount of satisfaction varied from class to class.

5. According to the judgment of the college students, direct observation was slightly superior to closed-circuit television for observing classroom instruction, although for some phases of the observation process closed-circuit television was slightly superior to direct observation.

6. In general, high school pupils willingly accepted their role in the use of closed-circuit television for classroom observation, but they tended to become less favorable after having participated in its use.

7. Marked differences existed among the pupil groups with respect to their acceptance of the use of closed-circuit television, but these differences were not consistent and they formed no definite pattern of acceptance.

8. In general, college students accepted the use of closed-circuit television for observation of classroom instruction and judged it to be an effective alternative and/or supplement to direct observation.

Growing out of that study came the recommendations that:

1. The use of closed-circuit television be continued for observation of high school classroom instruction as an alternative and/or supplement to direct observation in the teacher education program at Indiana University.

2. The project be expanded to provide opportunity for education classes in other areas to use the television facility.

These recommendations have been carried out, and the program has now been expanded to include the televising of elementary school classes and other secondary classes. The college students using the facility have represented other than methods classes. Records show that members of the following classes have made use of the closed-circuit television facilities: Education F100, Introduction to Teaching; Education P240, Educational Psychology for Secondary Teachers; Education S525, Supervision of High School Instruction; Education S527, Junior High School Problems; Education S526, Workshop in Junior High School Administration; and Education S528, Workshop in Junior High School Curriculum.

Included in the appendix is a sample of the request sheet used by groups wishing to use the closed-circuit television facilities. By keeping a record by means of request sheets, greater use can be made of the closed-circuit television installation. School of Education instructors make provisions directly with the teacher of the University School class with respect to the purposes of the observation and the method or material to be used in meeting those purposes. One copy of the request sheet is given to the principal of the University School to inform him of these arrangements, so that he can schedule the use of the television room in the University School. A

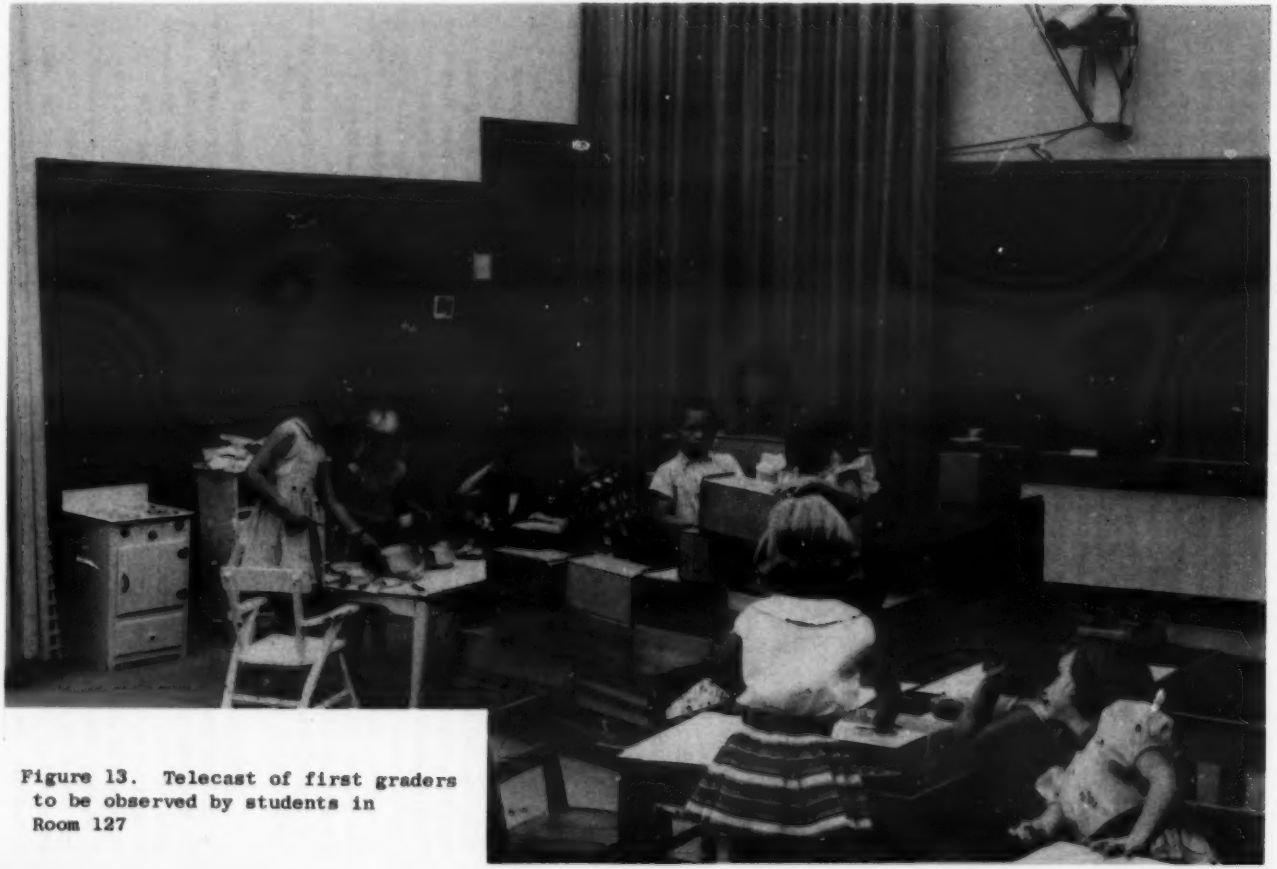

Figure 13. Telecast of first graders to be observed by students in Room 127

second copy is given to the Assistant to the Dean of the School of Education, who likewise needs to know of the arrangements in order to schedule classes in the receiving room in the School of Education. The third copy is sent to the person in the Radio and Television Department who is responsible for the scheduling of a technician to operate the transmitting and receiving equipment.

CHAPTER IV

PROBLEMS AND ADVANTAGES

The use of television at Indiana University, as well as elsewhere, has created certain problems in planning and providing for educational programs and certain questions concerning the extent and value of such programs.

Problems Often Encountered

Most apparent among the problems encountered are (1) cost, (2) lack of available television teaching talent, (3) lack of physical facilities, (4) scheduling, (5) difficulty of adapting teaching material, and (6) copyright and royalty restrictions with respect to teaching material and television teachers. Although no attempt is made to formulate solutions to the problems posed, a brief comment about each may be appropriate.

1. The cost item is new and must meet the opposition that any addition to the budget would normally meet. However, it frequently does not cost more, or even as much in most cases, to provide adequate closed-circuit television equipment in a new school as it does equipment for a specialized classroom, a shop, a library, a laboratory, a cafeteria, or a gymnasium.

2. Past experience in television has demonstrated that an effective classroom teacher can learn to be an effective television teacher. Practice, self-criticism, and a great deal of detailed planning are necessary. Generally speaking, good classroom teachers make good television teachers, but there are special techniques any teacher must master in making effective use of the television medium in teaching.

3. In many places studios equipped with stage lighting and graphic equipment are completely lacking. Therefore, few good physical facilities are available to assist in the presentation of a television lesson. On the receiving end, most schools have poor television reception rooms. Auditoriums and cafeterias have not been designed for use as classrooms. They were not built for this purpose and are therefore far from ideal. As new buildings are constructed, however, better facilities are being provided.

4. With respect to scheduling, school administrators need to consider a complete break with tradition in some cases and to allow much more flexibility in scheduling. There should be less emphasis on adherence to the Carnegie Unit.

5. More emphasis can naturally be put upon graphic and visual learning devices. Television lessons need to be more carefully planned than conventional lessons. Since more material can be covered by television than by a teacher in a conventional classroom, the matter of adapting this new technique of teaching by television to the varying abilities of the students becomes increasingly important. Television teachers often reach several hundred, or even several thousand, students in widely scattered classrooms.

6. A question has arisen concerning whether television teachers can be classified as performers and, therefore, whether they can be justified in seeking copyright provisions for their materials and a royalty fee for their performance. The American Federation of Radio Artists may have a hand in helping to decide this question. In a sense, television teachers are performers, and their materials and techniques are subject to scrutiny in uncontrolled situations by a non-captive and non-selected audience. Their efforts are not confined to a specific classroom or to those who have paid an enrollment fee.

Questions Often Asked

The questions often raised with respect to the use of instructional television usually include the following:

Will instructional television tend to standardize curricular content, and thus oppose the emphasis upon individual differences? Textbook publishers assure us that in most fields five or six different texts account for 70 to 80 per cent of all class adoptions. Therefore, our principal instructional resource now in use is already standardized to a great degree. This is not necessarily bad, of course, for a common minimal body of content may be desirable. Just as with teachers using textbooks, the classroom teacher using television will help with the individualizing of instruction. Further, by removing from the teacher a certain amount of lesson preparation, television can allow the teacher more time to spend with individual students in an effort to meet their specific needs.

How can instructional television provide for interaction between the teacher and the pupil? The studio teacher can do much to stimulate interaction empathetically by communicating enthusiasm and by being mindful of the learning techniques and teaching skills which he has learned from experience with live classes. Interaction in learning occurs in ways other than between student and teacher; it also takes place within the learner, between the learner and his environment, between subject area and subject area, and between learner and fellow learner. Interaction further depends largely on the kind of learning intended and must vary with the goals sought by the learner. It is well, too, to remember that some teacher or assistant will be present in the learner's classroom to assist interaction by

providing for discussions of the lesson, by adapting the lesson to the needs of the pupils, and by reinforcing and expanding it through a variety of classroom activities and materials.

Can instructional television provide a means of critical thinking in the pupil? The best instructional television of recent years has emphasized the presentation of problems and situations, usually leaving discussions for the follow-up period. Students have shown that thought-provoking questions asked by the studio teacher can stimulate them to do independent research, wider reading, and more learning on their own. Frankly, not enough is known about the relationship of critical thinking to any method of instruction.

Will the size of class be too large for optimum learning? So far as television reception is concerned, the important thing is that each student be able to see and hear well. Strategic placement of receivers and an increase in their number can fulfill this need. It is true that television makes possible the presentation of a lesson to large numbers of students simultaneously. While this size of class requires more planning and organization, anticipated discipline problems have not materialized, and as much or more learning has taken place in large classes as in the comparative intimacies of the smaller classroom. Experience to date does not indicate that there is any particular size of class that is better than another for television instruction.

Will the use of educational television replace teachers? It is likely that some changes will come about in the functions to be performed by some teachers. But more teachers, not fewer, will be needed in the years ahead. They will be needed to direct and supervise activity programs, group discussions, and remedial teaching; to develop the ability of pupils to do problem solving and critical thinking; and to establish in pupils desirable habits and worthy ideals. At the present rate of preparation, there will not be enough teachers in the years ahead to continue the ratio of one teacher for 30 pupils, regardless of how teaching is done or what is taught. From the standpoint of sheer manpower, some way must be found to get more teaching done with fewer people.

Need for Fundamental Research

Perhaps the greatest problem in the use of instructional television stems from the lack of basic fundamental research. The medium is a new one, and relatively little is known about it by people both within and without the profession. They are, therefore, apathetic and sometimes prejudiced and antagonistic toward the medium. Because of lack of information, people in the profession are sometimes inclined to look upon this new medium as a threat to vested interests and established practices.

A careful study of the foregoing problems in the use of television in education shows they are not unsurmountable, and that, when solved, they may provide the following possible advantages:

1. The creation of another teaching device

2. The adding of another teaching resource

3. The freeing of the classroom teacher for more student guidance and individual assistance

4. The bringing to students of additional experiences far beyond the potential of the conventional classroom, such as:

   a. Outstanding resource people

   b. Places of interest

   c. Illustrative materials

5. The raising of the quality of instruction in many schools

6. The providing of in-service education for teachers

7. The promoting of greater interest in education within the community

8. The assisting of students to accept more responsibility for their own learning

9. The stimulation of curriculum revision to meet growing needs of an exploding population and an expanding field of knowledge.

A group of educators, of whom the author was one, who were responsible for writing the manual for area coordinators in the Midwest Program for Airborne Television, summed up the possible role for television in education by stating:

> Change in our traditional instructional patterns is not so much a luxury as it is a sheer necessity for survival. The difference between technological advancement and social progress was recently symbolized in a cartoon depicting technology as a jet plane soaring high above, and social advancement as a tortoise creeping slowly on the earth below. Instructional television offers one of the means to help reduce this gap in the rate of social progress; it extends a tow to slow-moving social change and provides assistance in keeping pace with man's new need for knowledge. We can no longer afford to shrug off the charge that it takes 50 years for a

new idea to gain general acceptance in American education. We do not have 50 years; we may not even have ten. We cannot be timid or procrastinating about continuing to experiment with all promising practices that may resolve our educational dilemma.

BIBLIOGRAPHY

Allen, R., Quartermaster Training Command Educational-Television Study, Quartermaster School, Quartermaster Training Command, Fort Lee, Va., June 4, 1954, duplicated.

Anderson, G. R., and Vander Meer, A. W., "A Comparative Study of the Effectiveness of Lessons on the Slide Rule Presented via Television and in Person," The Mathematics Teacher 47:323-327, May, 1954.

Bailey, H. S., "Teaching Physics on Closed-Circuit Television," Dissertation Abstracts 19:1947, February, 1959.

Belson, W. A., "Learning and Attitude Changes Resulting from Viewing a Television Series 'Bon Voyage,'" British Journal of Educational Psychology 26:31-38, February, 1956.

Black, W. A., A Report on the Use of Closed-Circuit Television at Kansas State Teachers College, Kansas State Teachers College, Pittsburg, June, 1957, 37 pp.

Boone, W. F., Evaluation of the U.S. Naval Academy Educational Television as a Teaching Aid, United States Naval Academy, 7010 7-26-54, Annapolis, October 29, 1954, duplicated.

Carpenter, C. R., and Greenhill, L. P., An Investigation of Closed-Circuit Television for Teaching University Courses, Instructional Television Research Project no. 1, The Instructional Film Research Program, Pennsylvania State University, University Park, July 31, 1955.

Committee on Studies, Subcommittee on Television and Teacher Education, Closed-Circuit Television in A.A.C.T.E. Member Institutions, Television and Teacher Education, vol. 11, no. 5, The American Association of Colleges for Teacher Education, Oneonta, N.Y., May 16, 1958, 15 pp.

Committee on Television, American Council on Education, Educational Television Newsletter, no. 20, American Council on Education, Washington, D.C., June, 1958, 4 pp.

Educational Television and Radio Center, Educational Television and the Schools, Educational Television and Radio Center, Ann Arbor, Mich., January, 1958.

Educational Television Fact Book, A Report to the President of Radio Corporation of America, n. pub., New York, 1958, 64 pp., mim.

Erickson, C. G., and Chausow, H. M., "The Chicago City Junior College Experiment in Offering College Courses for Credit via Open Circuit Television: A Report of the Second Year of a Three Year Project," Chicago City Junior College, no. 17, April, 1959.

"ETV: 5 Years and $60 Million Later," Broadcasting 53:94-120, November 11, 1957.

Evans, R. T.; Roney, H.B.; and McAdams, W. J., "An Evaluation of the Effectiveness of Instruction and Audience Reaction to Programing on an Educational Television Station," Journal of Applied Psychology 39:277-279, August, 1955.

Fritz, M. F.; Humphrey, J. E.; Greenlee, J. A.; and Madison, R. L., Survey of Television Utilization in Army Training, Special Devices Center, Human Engineering Report, SpecDecCen 530-01-1, Port Washington, L.I., N.Y., December 31, 1952.

Hagerstown, Maryland, The Board of Education, Closed-Circuit Television: Teaching in Washington County, 1958-1959, The Board of Education, Hagerstown, March, 1959, 50 pp.

Harshbarger, H. C., and Becker, S. L., Teaching by Discussion on Television, Television Center, State University of Iowa, Iowa City, 1955(?), duplicated.

Hull, R. B., "Educational Television Activity in the North Central States--An Overview," The North Central Association Quarterly 32:357-358, April, 1958.

Husband, R. W., "Television Versus Classroom for Learning General Psychology," American Psychologist 9:181-183, May, 1954.

Indiana University Radio and Television Service, Radio and Television Department, President's Report, 1959-1960, The Department, Indiana University, 1960, unpublished manuscript.

Joint Council on Educational Television, Educational Television Factsheet and Box Score, Joint Council on Educational Television, Washington, D.C., January, 1958, 31 pp.

Kanner, J. H.; Runyon, R. P.; and Desiderato, O., Television in Army Training: Evaluation of Television in Army Basic Training, Human Resources Research Office, The George Washington University, Technical Report 14, Washington, D.C., November, 1954.

Keller, R. J., and Gould, O. E., Closed-Circuit Television in Teacher Education, College of Education, University of Minnesota, Minneapolis, June 15, 1957, 65 pp.

Midwest Council on Airborne Television Instruction, Manual for Area Coordinators, Unpublished manuscript, June 15, 1960, p. 13.

Newburn, H. K., "Editorial," Journal of the University Film Producers Association 10:3, Winter, 1958.

Parsons, T. S., A Comparative Analysis of Some Outcomes of Instruction by Kinescope, Correspondence Study and Classroom Procedures, School of Education, University of Michigan, Ann Arbor, 1955.

Pasewark, W. R., The Effectiveness of Television as a Medium of Learning Typewriting, Unpublished doctor's dissertation, New York University, New York, 1956.

Pollock, T. C., "Television as a Means of Instruction in the College Classroom," in International Educational Television Seminar, Division of Communication Arts, School of Public Relations and Communications, Boston University, Boston, 1957, 35 pp., mim.

R.C.A. Educational TV News, no. 31, Radio Corporation of America, Camden, N.J., February, 1959.

Rock, R. T., Jr.; Duva, J. S.; and Murray, J. E., Training by Television: A Study in Learning and Retention, Special Devices Center, SDC Report 476-02-3 (NAVEXOS P-850-3), Port Washington, L.I., N.Y., n.d.

The San Jose State College Teacher Education Experiment, San Jose State College, San Jose, Calif., 1956, 19 pp., mim.

Stoddard, A. J., Schools for Tomorrow: An Educator's Blueprint, The Fund for the Advancement of Education, New York, May, 1957, 60 pp.

Stromberg, E. L., "College Credit for Television Home Study," American Psychologist 7:507-509, September, 1952.

Tannebaum, P. H., Instruction Through Television: An Experimental Study, Institute of Communications Research, University of Illinois, Urbana, 1956, duplicated.

Ulrich, J. H., "An Experimental Study of the Acquisition of Information from Three Types of Recorded Television Presentations," Dissertation Abstracts 15:2346, November, 1955.

Voorhies, W. T., An Analysis of Pupil and College Student Opinions Concerning the Use of Closed-Circuit Television for Observation of Classroom Instruction at Indiana University, Doctoral dissertation, Indiana University, Bloomington, June, 1960, 229 pp.

What They're Saying About Educational Television, Educational Television and Radio Center, Ann Arbor, Mich., n.d., pamphlet.

Willis, B. C., Evaluation Report of the Two Week Experiment of Direct Teaching on Television, Chicago Public Schools, Chicago, 1956, duplicated.

APPENDIX

School of Education
Indiana University

CLOSED CIRCUIT TELEVISION

REQUEST FOR USE BY SPECIAL GROUPS

Send one copy to Mrs. McCaw in Education Room 233, and one copy to Mr. William Kroll in Radio Building, Room 9, and one copy to Mr. Paul Schilling in University School.

Name of Group or Activity _____

Person in Charge _____

Address _____

Phone Number _____

Purpose _____

_____

Dates	Times
_____	_____
_____	_____
_____	_____
_____	_____

Special Arrangements to Be Made:

Personnel _____

_____

Equipment _____

Other _____

Person Responsible for Making Special Arrangements _____

Address _____

Phone Number _____

BULLETINS IN THE FIELD OF EDUCATION
INDIANA UNIVERSITY

The Bulletin of the School of Education, Indiana University, was first published in 1924 and has appeared regularly since that time. A complete list of bulletins may be obtained from the School of Education upon request. The studies included in the present volume and in the two volumes immediately preceding it in date are listed below. Unless otherwise indicated, these may be obtained for $1 each from the Indiana University Bookstore, Bloomington, Indiana.

Volume 35 (1959)

1. Wright, Wendell W., and Jung, Christian W., Why Capable High School Students Do Not Continue Their Schooling, 78 pp.

2. Hughes, Otto, The Role of the Campus Laboratory School, 48 pp.

3. Research Studies Related to the Improvement of Education in Thailand, 66 pp.

4. Batchelder, Howard T., Report of a State-Wide Study of the Public Schools and Teacher Education in Indiana, 82 pp.

5. Church, Harold H., and Lewis, Melvin S., An Appraisal of the School Surveys Conducted by the School of Education, Indiana University, 66 pp.

6. Barr, W. Monfort; Church, Harold H.; Stapley, Maurice E.; and McGhehey, Marion A., School District Reorganization in Indiana, 136 pp.

Volume 36 (1960)

1. Clayton, A. Stafford, editor, John Dewey in Perspective, 44 pp., $1.25.

2. Klinge, Paul E., A University Summer Program for Gifted Science Students, 54 pp., $1.25.

3. Turner, Richard L., and Fattu, Nicholas A., Skill in Teaching, A Reappraisal of the Concepts and Strategies in Teacher Effectiveness Research, 40 pp., $1.25.

4. Welch, Ronald C., Promising Practices in Elementary School Mathematics, 54 pp., $1.25.

5. Strom, Ingrid M., Research in Grammar and Usage and Its Implications for Teaching Writing, 23 pp., $1.25.

6. Bern, Henry A., editor, New Directions in Audio-Visual Communications, 83 pp., $1.25.

Volume 37 (1961)

1. Voorhies, William T., Television in Education, with Emphasis on Its Use at Indiana University, 46 pp., $1.25.